CHICAGO
MEDICAL JOURNAL.

VOL. VI.] DECEMBER, 1863. [No. 12.

SELECTED.

THE MORBID CONDITIONS OF THE BLOOD.

A Lecture by AUSTIN FLINT, M. D.

GENTLEMEN:—I have selected as the subject of the few lectures assigned to me during the preliminary term, the morbid conditions of the blood. I have selected this subject with reference, not so much to its attractiveness, as to its great importance. With our present pathological views, the question as to the existence of morbid conditions of the blood enters into the consideration of a very large proportion of diseases.

As expressive of the importance of the blood, it is distinguished as the *vital* fluid. In literature and common parlance it represents life. "Life's blood" is a common expression. To have one's blood is to take life. Its importance is shown by the fact that its presence in all the so-called vital organs is indispensable to the exercise of their functions. A striking and familiar illustration of this fact is afforded by the temporary loss of the mental faculties and consciousness, as a result of a momentary arrest of the supply of blood to the brain, in syncope or fainting. The blood, in fact, may be said to be the grand condition of vitality. Its detention from a part occasions the molecular death of the part, i.e. gangrene or sphacelus. Its abstraction, beyond a certain limit, from the body, occasions general or somatic death. The suspension of its

distribution by an arrest of the heart's action for two or three minutes only, is fatal. It forms a vital medium for all the organs essential to life, on which they are dependent, as the body or the blood itself is dependent on the surrounding atmosphere. The physiological relations of the blood to the solid parts being so intimate, it might reasonably be expected *à priori*, that pathological changes in this fluid should give rise to corresponding morbid phenomena in the organs and tissues of the body. Observation shows this to be true. There are grounds for the belief that a large proportion of the morbid actions and changes which occur in the solid parts, are due to prior alterations in the blood. In many instances, as will be hereafter seen, the dependence of the former on the latter may be inferred, or rendered probable, although not demonstrable with our existing knowledge. Supplies for the growth and repair of all the body are contained in the blood. This fluid, therefore, represents, in its constituents, all the elements which enter into the composition of all the solid parts. It is taking but a step from the prosaic walks of scientific fact to the domain of fancy, to say that the blood is the solid body in a liquid state. "The blood is the centre round which the general metamorphosis of animal matter revolves, and in which it is perfected."* It might be rationally predicted that morbid alterations in its composition and distribution may lead to diseases seated in the solids, and this will be found to be the case. Another aspect foreshadowing the importance of the blood in its pathological relations, is its office as a reservoir for the accumulation of effete principles, the detritus of the tissues, which are to be eliminated by excretion. Here is a source of disease, as will be presently seen. Again, the physiological activity or mobility of the blood is very great. In this respect it is in striking contrast to the solid parts. It is the seat of unceasing changes, and yet, in health, maintains a uniform state as regards its organization and composition. New matter, derived from ingesta, is daily added in considerable quantity, and a proportionate amount is derived from the decomposition of the tissues. Portions are appropriated by the different structures. Other portions are secreted for various useful purposes in the economy. Other portions are thrown off or excreted. There is a constant interchange of the gaseous elements with the surrounding atmosphere by means of respiration and through the cutaneous surface. Thus, it is the

* Lehmann.

seat of constant and great changes, denoting wonderful activity, and yet its constitution remains the same. In this fact are admirably exemplified the precision and adaptation of the laws presiding over the safety and welfare of the organism. But this activity necessarily renders it more liable to morbid actions and conditions than the solid parts, which in health are less active and more stable.

The blood is a complex fluid. It contains a large number of ingredients, preserving, however, certain fixed anatomical character. Anatomically considered, it consists of certain corpuscular bodies, viz. the red globules, the white globules or leucocytes, and globulins, which are suspended in a liquid called the *liquor sanguinis*, blood-plasma, or intercellular fluid. These are resolvable, by analysis, into numerous elements, some of which are organic, i.e. peculiar to organic bodies, and others inorganic or mineral. Examples of the organic elements are, fibrin, albumen, hæmatine, etc. The inorganic elements embrace various saline ingredients, iron, water, and several gases. Further details belong to anatomy and physiology. It is necessary thus to glance at the composition of the blood, in order to arrange its morbid conditions. These con ditions relate to the different constituents of the blood; and, with a view to the consideration of pathological changes, the latter may be distributed into three groups. The first group will embrace the corpuscular, distinguished also as the organized, constituents. The second group will consist of the organic elements. The third group will comprise the mineral substances. Morbid conditions, affecting, severally, these three groups, will be first considered in the foregoing order, and afterwards, morbid conditions due to the introduction into the blood of substances which do not enter into its normal composition. Even with our present imperfect knowledge of the blood in health and disease, it is, in itself, a large field of study, which, considered as a distinct province of medicine, is called *hæmatology*.

Of the corpuscular or organized constituents of the blood, the most abundant and important are the *red globules*. The known morbid changes affecting these, relate in the first place to their number. They may be morbidly increased or diminished in number. An increase of the number of red globules beyond the healthy limit constitutes the morbid condition called *plethora*. A diminution below the limit of health constitutes the morbid condition called *anæmia*.

The relative proportion of the red globules to the other con-

stituents of the blood may be increased by diminution of the latter. This obtains in a marked degree in epidemic cholera, owing to the draining away through the intestinal canal of the water of the blood, together with various elements held in solution by the transuded liquid. The density of the blood in this disease is notably increased; it becomes thick and heavy, and the circulation is mechanically impeded. Under these circumstances, the red globules are relatively in abnormal excess, although they are actually less in number than in health. The term plethora is only applicable to an actual increase of the number of red globules. This is now the significance of the term, without regard to the quantity of the mass of blood. An increase of the mass, causing over-repletion of the vessels does not constitute plethora, although implied in the etymology of the term. This condition is called *polycæmia*. Its existence to an extent sufficient to constitute a morbid condition of importance, is doubtful.

The functions of the red globules in health are not fully understood. Their relative normal ratio to the other constituents of the blood differs considerably in different animals, and they appear to sustain a certain relation to vigor, strength and activity; that is, they are abundant in races, breeds, and individuals, in proportion as the general attributes of the body just named are marked. Their importance is shown by the fact that animals bled nearly to death may be reanimated by injecting into the veins red corpuscles suspended in serum, and not by the introduction of the other constituents of the blood without the red corpuscles. From what is known of their physiological relations, it might be inferred that the effects of their morbid excess would be over-activity of the circulation and undue excitement of organs in proportion to their normal activity and the quantity of blood which they receive in health. The phenomena of plethora denote these effects. The power of the heart's action is increased. The temperature of the body is raised. The brain is stimulated, giving rise to unusual muscular mental energy and excitement. Sensibility and muscular irritability are augmented. In comparing, however, different persons, it is not easy to draw the line of demarcation between more or less intensity of the so-called sanguine temperament and plethora. A better idea of plethora, as a morbid condition, is formed by a comparison of the same person at different periods, and especially if the person have naturally a temperament not notably sanguine. He acquires more color in the prolabia and face. The mucous mem-

branes are reddened. The pulse is full and strong. The heart's impulse is increased. The physical and mental powers are more active. The body is notably warm. Pain in the head is readily induced by stimulants or mental excitement, owing to the abnormal power of the circulation. This condition involves a liability to active cerebral congestion. It is supposed to constitute a predisposition to acute inflammations. It doubtless tends to render inflammations more intense, and to increase the symptomatic febrile movement. It may favor hæmorrhages, especially into the brain, by means of the increased force of the circulation. On the other hand, an abundance of red globules exempts from nervous disorders, to which, as will presently be seen, a paucity of red globules predisposes.

The causes of plethora are, first, a constitutional tendency, which may be congenital and inherited; second, overfeeding, with the use of generous wines and condiments; third, diminished expenditure of blood constituents in nutrition, incident to ease, idleness, and luxurious habits, the digestive and assimilative functions remaining active; and fourth, the arrest of periodical or habitual hæmorrhages, or some other drain to which the system had become accustomed. These several causes are frequently combined.

It is important for the physician to appreciate the condition of plethora, in order to avert the evils to which it tends, by appropriate management. And, as an incidental element in different diseases, it is to be taken into account in considering the effects of therapeutical measures. It is relieved for the time, most promptly and efficiently by bloodletting. An immediate effect of the abstraction of blood is a notable reduction in quantity of the red globules. Of course the propriety of resorting to bloodletting will depend on the degree of plethora and the apparent imminency of evil results. Other means to diminish the excess of red globules are, a reduced diet, as regards the quantity and quality of food, and exercise in order to increase the expenditure of blood-elements in repairing muscular waste, and render the amount of eliminated matter more abundant. Certain medicines appear to exert a direct effect upon the number of red globules. Mercury is such a remedy, as shown by the pallor which accompanies salivation. Mercurialization, however, is never indicated for the attainment merely of this object.

It is important not to confound plethora with other morbid conditions of the blood or circulation. Fulness of the vessels

due to some impediment to the circulation, has not unfrequently been considered as plethora. This may exist where the red globules are diminished, rather than increased. A pseudo-plethora, for example, is not uncommon in pregnancy, the red globules being diminished in this state. Bleeding was formerly employed with reference to this pseudo-plethoric condition of course with an injurious effect on the constitution of the blood. With pseudo-plethora, or fulness of the vessels, there is often evidence of deficient oxygenation of the blood, together with dulness and oppression instead of heightened activity of the functions of the brain and other organs. True plethora is to be determined by the symptomatic phenomena which have been mentioned, taken in connexion with the evidence afforded by the pulse and other symptoms of an unobstructed, free circulation, with the activity of the digestive and assimilative functions, and the existence of one or more of the conditions under which this morbid condition is known to be produced. A microscopical examination of the blood may suffice to determine the existence of the plethora, if the observer be sufficiently practiced to decide whether the red globules in several successive specimens are in excess or not. It may be determined by quantitative analysis, but the process is too tedious and delicate for ordinary clinical purposes.

As regards the essential pathological nature of plethora, all that can be said is, it consists in a hypergenesis of the most important of the organized or corpuscular constituents of the blood, the red globules. The pathologist might expect to explain this morbid condition more fully, if the physiologist was able to tell us where and by what process the red globules are normally produced.

A morbid diminution of the red globules of the blood constitutes *anæmia*. The etymology denotes diminution of the mass of blood, but, conventionally, the term is used to signify reduction of the quantity of red globules. *Spanæmia* is sometimes used in the same sense.

The purest exemplification of anæmia is afforded by cases in which it has been produced by copious hæmorrhages or repeated bloodlettings. It is not easy to effect, except for a transient period, a considerable reduction in the mass of blood. After a loss by hæmorrhage or bloodletting, the quantity of liquid which has escaped is quickly replaced, but the red globules are not so speedily renewed,and hence the latter continue for a greater or less period to be deficient. This condition

is one of the forms of so-called impoverished or poor blood. The degree of impoverishment varies. The proportion of red globules has been observed to fall below the normal range (120 to 130 in 1000 parts) to 70, 60, and even 21 to 1000 parts.

Anæmia is of frequent occurrence. It is incident to a variety of diseases. It gives rise to a multiplicity of phenomena. It is a condition highly important for the physician to appreciate and recognize. The knowledge of this condition obtained within late years constitutes one of the most striking of the characteristics of modern medicine in view of its importance on medical practice. It occurs much more frequently than the opposite morbid condition, viz.: plethora.

In general terms, the pathological effects of anæmia are the reverse of those due to plethora. The power of the circulation is diminished, and there is a deficiency of the functional energy of different organs, the more marked in proportion to the quantity of blood which they receive in health. The phenomena denote these effects. The animal temperature is lessened. Anæmic patients have coolness of the surface, and especially cold extremities. They are not so able to resist cold as the plethoric. The action of the heart is feeble; the pulse is small, weak, compressible. The action of the heart is easily disturbed, becoming rapid from slight causes, and frequently irregular. The mental energy is diminished; persons are not adequate to the intellectual efforts of which they are capable in health. The strength of will and determination of purpose are impaired. The vital functions are languidly performed. The muscular strength is diminished. The surface is pallid from the deficiency of the hæmatine or coloring matter contained in the red globules. This pallor is apparent in the face, and especially the prolabia. The mucous membranes accessible to view have less redness than in health. The countenance at once denotes the existence of anæmia if the condition be marked.

It induces a multiplicity of morbid phenomena arising from disordered action of the nervous system. The relations of the blood to the functional activity of the nervous system are strikingly shown in the morbid phenomena pertaining to the latter, which spring directly from morbid conditions of the former. And the special relations between the red globules and the nervous system are shown by the phenomena incident to anæmia. These phenomena are numerous and diversified. The more frequent and prominent are as follows:—Mental depression, anxiety respecting health, hypochondriasis, irritable tem-

per, want of buoyancy and energy, a feeling of lassitude, and a painful sense of inertia or indolence. There is apt to be a feeling of incapacity for muscular exertion greater than the actual loss of muscular power. The physical and mental powers are especially depressed during the process of digestion. Palpitations frequently occur, so that organic disease of the heart may be suspected by those not conversant with physical means of diagnosis, and is greatly feared by the patient. Neuralgia in various situations is apt to occur, and in females hyperæsthesia of the abdominal walls simulating peritonitis. The varied symptoms which have been heretofore described as belonging to spinal irritation are likely to occur in connexion with anæmia. It sustains a causative relation to nearly all the functional affections of the nervous system embraced under the head of the *neuroses*. A large proportion of persons affected with any one or more of this class of maladies are anæmic; and conversely, a large proportion of anæmic persons become affected with neurotic disorders. It is highly important that this pathological element be taken into account in the management of the neuroses. When it occurs independently of the various affections with which it is connected incidentally, it is characterized especially by phenomena relating to the nervous system. These phenomena may be said to constitute the pathological expression of this morbid condition of the blood.

If it be asked, what is the explanation of the occurrence of these phenomena in consequence of a diminution of the red globules, the pathologist can only say that he may hope to answer the question when the physiologist is able to explain the normal relation between the presence of the red globules and the functions of the nervous system. Pathological facts show that an essential relation does exist between these two anatomical elements of the body. The nervous system depends on this blood-constituent for the manifestations of healthy life, and hence a deficiency occasions manifestations of disordered life, or morbid vital phenomena.

The causes of anæmia, when it exists independently of the various affections with which it is associated, are frequently obvious, but in some instances not assignable. It is a result of hæmorrhages, from wounds, flooding after labor, and in cases of menorrhagia, or injudicious bloodletting. It may proceed from deficient alimentation; the food being insufficient in quantity or not sufficiently rich in alimentary principles. It is caused by a loss of certain of the elements of the liquor san-

guinis or blood plasma, which are necessary to the production of red globules. Thus, frequent causes are prolonged lactation and a rapid succession of pregnancies. The obvious causes may be arranged into the three classes just stated, viz.: 1st, Causes which involve an actual loss of red globules, as in hæmorrhages; 2d, Causes involving a defective supply of materials for assimilation; and, 3d, Causes which occasion expenditure of the constituents of the liquor sanguinis on which the production of the red globules is dependent.

The causes are not always apparent. Anæmia is apt to occur in females at or near the age of puberty, where there has been no loss of blood, no dificiency in alimentary supplies, or no unusual expenditure of blood-plasma. Under these circumstances it constitutes the affection to which the name *chlorosis* was applied before the anæmic condition was fully understood. If this name be retained it should be considered as denoting anæmia under the circumstances just stated. It appears to be in some way connected with the evolution of the reproductive functions. In some cases it may be accounted for by the derangement of the assimilative functions at this period. In these cases the appetite is poor, the digestion disturbed, and there is apt to be a craving for indigestible, innutritive substances, such as chalk, slate, coal, etc. Addison has described cases of anæmia occurring without any obvious causation, accompanied by general debility, which progressively increases, at length ending fatally without appreciable lesions of any of the vital organs. Cases of this kind are occasionally met with, especially in hospital practice. Addison distinguishes them as cases of "idiopathic fatal anæmia." In a certain proportion of these cases, the surface of the body, to a greater or less extent, assumes a dark discoloration or a bronzed appearance, and in several successive cases the supra-renal capsules were found to be more or less disorganized. Addison inferred from these facts a pathological connexion between disease of the supra-renal capsule and the bronzed hue of the skin. Clinical observation, however, shows that the two events are not uniformly associated.

In a large proportion of the cases in which anæmia exists, it is incidental to, or a pathological element of some other affection. And, as thus associated, it may or may not claim the special attention of the practitioner. Of the great number of diseases in connexion with which it is connected either constantly or frequently, the following list will inclose the more prominent.

1. Tuberculosis. Anæmia is generally early developed in tuberculous affections, and may precede the deposit of tubercle.

2. Carcinoma. The pale, waxy, or straw-colored complexion which characterizes some cases of carcinomatous disease, denotes anæmia.

3. The affections embraced under the name of Bright's disease. Associated with œdema of the face, the pallid complexion of anæmia becomes quite characteristic of these affections. The blood-changes which belong to these affections (to be hereafter considered) lead to diminution of the red globules.

4. A host of affections which involve expenditure of other constituents of the blood than the corpuscles, i.e. constituents of the *liquor sanguinis*, such as chronic dysentery and diarrhœa, chronic pleurisy, purulent formations in any part of the body, leuchrrhœa, etc.

5. Affections which involve loss of corpuscles, or hæmorrhage, as menorrhagia, hæmorrhoids, hæmatamesis, etc.

6. Affections compromising the assimilative functions by occasioning indigestion, vomiting, loss of appetite, etc.

7. Certain affections of the liver, and especially cirrhosis. It has been supposed that the red globules are produced within the liver. If this be true, diseases of this viscus may lead to their diminution by interfering with their production. But in cirrhosis this effect is due in a measure to the obstruction to the introduction of fresh alimentary supplies brought by the portal vein.

8. The periodical fevers, if protracted. The special cause of these fevers may induce anæmia even where the fevers are not developed. Persons inhabiting regions called miasmatic, are apt to become anæmic, although they do not experience fever.

Certain mineral substances introduced into the system lessen the red globules in a notable degree. This is true of lead. Anæmia is a pretty constant element of saturnine diseases; and it is observed in persons exposed to lead emanations before becoming affected with the characteristic diseases. The same is true of mercury. Mercurialization quickly reduces the quantity of red globules in a marked degree.

ON THE STRUCTURE AND DEVELOPMENT OF THE VERTEBRATE SKELETON.

By Professor HUXLEY, F.R.S.*

In the course of the preceding ten lectures I have done my best to confine myself to matters of fact, and to the interpretation which directly arises from a very simple method as applied to those facts. The matters of fact have, as far as practicable, been demonstrated before you; at any rate, they are capable of demonstration. The interpretation has rested upon a principle so obvious that it requires no special justification—the principle that those parts in various skulls are identical, and should receive the same names, which correspond in development, and in their relations to the soft parts and to one another. And for myself I confess that with the establishment of those matters of fact, of those direct interpretations, the great object of science seems to me to be largely fulfilled. But in the present condition of anatomical views upon the skull, a course of lectures upon the vertebrate cranium which should be devoid of some commentary upon theories which have been offered of the composition of the cranium would, justly enough, be considered imperfect; because there is a true theory as apart from the speculative hypotheses—there is a true theory, which is simply a generalized statement of the facts which we have found out; and there are other theories, which add to such generalized statement other considerations, and which may or may not be capable of verification.

That which is commonly understood now by the theory of the skull, is the doctrine that the osseous cranium—it must be borne in mind that the doctrine has gone no further than the osseous cranium—is made up of a greater or smaller number of coalesced vertebræ, and that, to use the accepted phrase, the skull is a modification of the vertebral column. That doctrine originated with a man of vast genius—a man, perhaps, unexampled in the history of letters and of science, as, combining as I think, the highest proficiency in both departments—I mean Gœthe. He originated, or rather I should say he invented, towards the end of the last century, the doctrine that the skull is composed of a number of segments, corresponding in their nature with the vertebræ. I am perfectly well aware

that this has been controverted. I am well aware that, not only in his own country, where there were personal interests and prejudices coming into play, but even in this country, where no such motives could intervene, the claims of Gœthe to this discovery have been disputed; and not only that, but that it has been more than insinuated—and it is with regret I state it—that the grand old poet, at seventy years of age, full of all the honors which his people had conferred upon him, was guilty of the meanness of taking to himself the credit of the doctrine invented by a young and rising professor, ignoring his claims and setting up others which had no foundation. Nay, more; the audacity of the accuser has gone so far as to suggest a certain stupidity, and that even Gœthe—this man of vast imagination and undoubted ability—was constrained to invent the same method of accounting for his discovery as that which had been given by Oken. The statement has passed into English literature; it is to be found in a work which will be consulted by all who wish to be acquainted with this matter, and it will doubtless be regarded as authority—it is to be found in an article upon Oken in the "Encyclopœdia Britannica."

What, then, are the facts of the case? Gœthe, writing in the year 1820, or thereabouts, has stated that the mode of his discovery of the vertebral composition of the skull was this: —"The three hindermost parts," says he, "I knew before; but it was only in 1791, when I picked up an old and broken sheep's skull amidst the sandy dunes of the Jewish cemetery in Venice, that I perceived that the facial bones were also composed of vertebræ; and perceiving, as I did, the transition from the first pterygoid bone to the ethmoid bone and to the turbinals quite distinctly, there I had an *aperçu* of the whole at once." We shall see that Oken, writing in 1807, also said, and no doubt with perfect truth, that he had been led to his conception of the theory of the vertebrate skull by picking up an old and whitened deer's skull upon the Hercynian, within the Hartz mountains; and it has been more than suggested that this statement of Gœthe's was a sort of clumsy fabrication imitating the invention of Oken. Happily, the general order of things in this world is tolerably just, and a document which Gœthe doubtless had himself utterly forgotten (and which it is pretty clear, by a comparison of dates, he had forgotten) has appeared within the last year or two, which places the veracity of the old poet beyond the reach of the most vigorous and determined assailant. That passage was brought to

light by an eminent German author a year or two ago, who says (referring to a correspondence which had just then been recently published between Gœthe and the family of Herder, the clergyman and great literary German) Gœthe was in the habit of corresponding with these people regularly; and he wrote, among other folks, to Madame Herder. One of his letters has come to light under the date of the 4th of May, 1790, and in that letter is this passage:—"By the oddest happy chance, my servant, by way of a joke, picked up a bit of an animal's skull in the Jews' Cemetery at Venice, and, by way of making fun, offered it to me as if he were presenting me with a Jew's skull. I have made a great step in the explanation of the formation of animals." It is quite clear that this is a complete and perfect testimony to the veracity of Gœthe when, in consequence of various circumstances that took place, he affirmed that thirty years ago (it was exactly thirty years ago) he had made the discovery to which I here refer. It is to be hoped now that all further detraction, at any rate, will cease on that point. And this detraction was the more unwise because it was wholly unnecessary. No person looking at the history of the past would dream of regarding Gœthe, who indubitably invented this doctrine, but who kept it to himself for thirty years—led to that course doubtless by the great difficulties which his vast knowledge and clear judgment showed him were in the way of the application of the doctrine—I say, no one would have been led to set up his claim as a discoverer against that which is justly the right of Oken, who, in the year 1807, in a similar manner to that which happened to Gœthe, was led, by picking up an animal's skull in the Hartz mountains, as I have said, suddenly to conceive that the osseous cranium was composed of three segments, and that the three segments answered exactly and precisely to so many vertebræ. No doubt Oken was the first promulgator of this doctrine; to him is all the credit that may attach to it justly due—all the credit that may attach to the definite discovery of the segmentation of the skull. Whatever we may think about his vertebral theory, no one can doubt at all that the merit of the discovery of the osseous segmentation of the skull is indubitably due to Oken; nor has anything been done since which in any way exceeds in merit that first singular paper which he published on the subject in 1807, under the head of "Ueber die Bedeutung der Schadelknochen." It was his inaugural address on taking the chair at the University of Jena; and to show you how easily this notion may have arisen,

I have here that subject which led Gœthe to imagine the vertebral theory, and that subject which Oken made use of as the best illustration of it—I mean a young sheep's skull. The parts here have simply been macerated, and otherwise are left free in their natural connection; but you will see that it is perfectly easy, by exercising a little pressure, putting in the first place a knife between the supra-occipital, to separate one segment between the supra occipital and the parietals, and, putting a knife again between the parietals and frontals, to separate another, and thus to obtain three perfectly distinct osseous segments. It was that which Oken saw in the bleached deer's skull; it was that which very naturally, and as I think very consistently, led him to say (he says the conviction came across him as a lightning flash) that this great skull, which contains the diluted continuation of the spinal marrow, is itself nothing more than a diluted continuation of the vertebral column. In his first essay he is guided entirely by the analogy of the sheep's cranium, and he says that the hindermost vertebra, which he calls the ear vertebra, is composed of the basilar portion of the occipital bones and the two ex-occipitals—the two auricular portions, and the supra-occipital; that the next segment is formed by the posterior sphenoid, by the great alæ of the sphenoid, and by the parietals; and that the anterior segment is formed by the pre-sphenoid, by the little orbito-sphenoids, and by the frontals. Use the term segments, leaving the doubtful term vertebræ out of place, and there cannot be a doubt that Oken was perfectly justified, and that the fact will remain as he stated it to be for all time, as one which you can always demonstrate in the osseous skull. Then he goes on to say that there is an anterior portion, consisting of the ethmoid, the nasals, and the vomer, and that you can take that away. He is somewhat doubtful as to what is the nature of this; but, at any rate, he suggests as a possibility that the vomer may be in reality the continuation forward of the vertebral axis formed by the pre-sphenoid, the basi-sphenoid, and the basi-occipital; and that perhaps it may represent two or three vertebræ coalesced. He appears to be misled by some statement on this subject by an anatomical writer; but that point he leaves open. At first he stands simply by the three cranial vertebræ, as he calls them. He says: "You may think, perhaps, that I have forgotten the petrosal bone. Not at all. This petrosal bone is not a vertebra; it contains no parts of one of its vertebral components of the skull; but it is a sensory organ; it is an ossification developed around the

organ of hearing which characterizes the formation of that organ, in just the same way as the membranous case around the eye is peculiar to that organ. Therefore you must regard this as something apart from the segments of the vertebræ, and look upon it as a sense capsule—not considering it as entering into the composition of the skull at all." Having arrived at this notion of the resemblance of the upper arches of the skull to the cavity of the upper arches of the vertebræ in the trunk the next step was a very simple and very obvious one. Finding in the skull, so far, a perfect resemblance to the vertebral column, Oken, not unnaturally, arrived at the conclusion that the lower arches of the skull—the parts of the face—must answer in some way or other to the parts of the trunk; and carrying out that idea with the boldness which was characteristic of him—indeed, I might almost have said with the rashness which certainly characterized the majority of his later speculations—he said: "If I find the repetition of this upper part of the vertebral column in the skull, I must also find a repetition of the lower part; and as I find there a thorax and abdomen, so I must find a thorax and abdomen in the skull"; and he said that the thorax of the skull was formed by the palatine bones and the adjoining parts, and that the abdomen of the skull was formed by the oral cavity. The idea is not so far-fetched as you might at first imagine. There is the same sort of *à priori* probability about it that there is about the identification of the upper arches of the skull with the upper arches of the vertebral column. By this time the notion of identity of composition as he progressed appears to have taken full possession of his mind, and he said to himself, "If we can find the upper and lower arches of the trunk in the head, we ought to be able to find the limbs." And totally undeterred by the difficulties which would have suggested themselves to a man of less daring in this matter—and those difficulties which, as I believe, kept Gœthe from promulgating his doctrine—he said: "I will find all these parts. There is the shoulder-blade of the head in the squamosal bone; there is the arm of the head in the jugal apparatus; and there is the hand of the head in the upper maxilla; and there are the fingers of the head in the teeth; and there is the thumb of the head in the pre-maxilla." If you had asked Oken how he knew that these were the fingers and thumbs, and so forth, he would probably have been puzzled for an answer. He would have told you that the idea dominated over all these things, and that that great perception of an archetype, which was

perceived perhaps only by the man of genius, could not be seen by inferior people who were simply looking at the facts; and he said, therefore, that the arm of the head was attached to the side of the head, fixed to it, and that the two hands of the head were, so to speak, expanded to the sides of the nasal capsule. Where, then, were the legs of the head? Nothing daunted, Oken said that they were to be found in the lower jaw, and that the teeth of the lower jaw were the toes of the head in the same way, and that the hyoidean apparatus was nothing more nor less than the pelvis of the head. One would have thought that the difficulty of finding two legs of the head attached to scapulæ of the head here was rather a strong one; but Oken has an answer for all these matters. It is not worth while to enter into them largely now, having other things to attend to. It does not seem to have entered his mind that for anything like scientific speculation you must have a criterion of the truth or falsehood of what you say, and that unless you have some such criterion, you can go on inventing theories and counter-theories until Doomsday, every one of which shall be just as good as every other. A few years afterwards, Oken enlarged his idea by regarding the nasal apparatus as a fourth vertebra, and thus arose that view of the skull as composed of four coalesced vertebræ, which has formed, without any considerable or material alteration, the basis of every speculation that has been published since. In this way Oken founded a school. His ideas were received with open arms in Germany, and his contemporaries, some of them, carried to a wonderful pitch the wildnesses—I had almost used a stronger word—with which the ingenious speculations of Oken are, to a vast extent, mixed. These, like Spix, for example, propounded the most extraordinary notions of the composition of the skull—notions which one must acquaint oneself with as a matter of history; but when one has done that, the best thing to do is to forget them, and to think of them no more. Others, more judicious, more accurate in thought, like Bojanus, enlarged the doctrine in other directions; but altered nothing, added nothing whatsoever to the method of Oken, but simply shifted backwards and forwards the lines of interpretation which he had suggested. By degrees the notion spread in France, or rather I should say that it had an independent origin there to a certain extent, partly depending upon an interchange of ideas with Germany, partly arising as the result of the development of notions which Geoffrey St. Hilaire propounded in France upon the unity of organization, and so forth. Thus further mod-

ifications were produced, some admitting three vertebræ, some making out that there were four, some that there were six, and some that there were seven; but the character of the reasoning and the method of the interpretation were not one whit changed from that which was invented by Oken.

In England, again, we have had our own propounders of similar theories. I do not know that anything which I have said about Geoffrey St. Hilaire and about the Germans does not equally apply to them. I am quite at a loss to find in our English speculations any advance whatsoever upon the method, or in the main upon the facts, of Oken. If it is absurd, without good evidence, to talk of the jugal apparatus and the squamosal apparatus, and the upper jaw, as being the arm of the head, it is at least as absurd, without equally good evidence, and upon mere fantastical grounds, to regard the arm as a rib of the head. The one notion has exactly the same value and scientific standing as the other, and if the transpositions of Oken shock the mind, not less do those who are accustomed to the study and careful interpretations which result from embryology feel astounded in having to believe that the appendage of the atlas has, somehow or other, got in front of the rib of the occipital bone, and thus given rise to the position of the parts as we find them. My business, however, is not to enter into a criticism of these theories, but simply to show what is their scientific position.

In France, however, and in England, there have been great exceptions to these mere blind developments of the notions of Oken. In France the enormous knowledge and accurate thought of Cuvier kept him from drifting into such conceptions. He admitted, as all must admit, that there was a segmentation of the skull; but the moment these notions of the vertebration of the skull were proposed, he said, "I want evidence; I want a criterion. It is of no use talking to me about the relative repetitions, shifting backwards and forwards and all the rest. I want something which shall prove to me that these processes really do take place, or I will not accept your interpretation." Therefore Cuvier always held aloof from the vertebral doctrine, and I confess for myself I fully sympathize with those occasionally somewhat bitter sarcasms with which he overwhelmed the advocates of those notions, pernicious to everything like accuracy of thought, in his "Ossemens Fossiles," and his "Histoire Naturelle des Poissons." In this country, again, there has been another exception. I allude to Professor Goodsir, of Edinburgh, and the able young men

who have risen from his training. He is the only man, so far as I know, either on the Continent or here, who has understood the value of that which took place between 1837 and 1840, or thereabouts, in Germany (of which I shall have to speak presently), and has endeavored to correct the errors of the merely Okenian line of speculation by the severe criteria of embryology. What was it, then, that took place between those years, 1837 to 1840, in Germany. It was a revolution in method—it was the discovery of that criterion for the want of which this wild and waste method of speculation upon the nature of the skull had originated. At about the period to which we refer, Reichert and Rathke, two men whose names must always be mentioned with the profoundest respect in connection with the skull, commenced their embryological researches, and instead of confining themselves to the easy task of sitting in their chairs and speculating backwards and forwards as to how the bones of the skull should be fitted together, like a child's puzzle, they set to work to ascertain how they had really come, and by the most laborious and difficult studies of development, to see in what manner the complex adult skull had arisen from its early state, and how, by tracing back the methods of development, by tracing back every skull to that early condition in which it resembles every other skull, you are able to identify the precise places at which each bone arose, and so to eliminate from your mind the mystifying influences of subsequent change. These men—Reichert, by his discovery of the visceral arches, and by his wonderful study of their modification; Rathke, by his investigations in comparative embryology, and his still more remarkable discoveries, as I think, into the true nature of the base of the skull, and the mode of its production—these men founded an absolutely new epoch and a new method; and for me any work which has been published since that time, and which contains no reference to the labors of these men, and ignores them, is on exactly the same scientific footing as a treatise on astronomy written at the present day which should ignore the discoveries of Newton; it is an anachronism, has no scientific place, and is unworthy of consideration.—*London Lancet.*

RETREAT FOR INTEMPERATE WOMEN.

The subject of the following communication is one the importance of which can hardly be exaggerated. The unfortunate victims of the vice to which it refers are among the most pitiable objects to which our professional sympathies are ever directed. The experience of nearly every physician must have furnished him with cases of this kind of the most embarrassing character. Household restraints and home influence are little better than worthless in these cases, and the prospect of an asylum where they can be received and tenderly cared for will bring an indescribable relief to many. We have no means of knowing how extensive a provision is required for the purpose in our own State, but we hail the commencement of this movement with the greatest satisfaction, and hope it may meet with the signal success which it deserves.

RETREAT FOR INTEMPERATE WOMEN.—The necessity of making some special provision for the victims of intemperance, partly for the benefit of the individual and partly for that of the community, is beginning to attract general attention, and the subject in its various bearings has been brought before the Massachusetts State Board of Commissioners on Insanity, as among the matters deserving their serious consideration.

Aside from the question of establishing a public asylum for inebriates, the advantages of which would be more naturally confined to the middle and lower classes, it appears that there is yet in New England no place of refuge for intemperate women of good social position except the public and private lunatic asylums, which are unfitted, in the almost unanimous opinion of their superintendents, for the reception of such cases; at many asylums, indeed, admittance being refused to them, alike in justice to the other patients and to the inebriates themselves. The number of applications at the New York General Asylum at Binghamton far exceeds the possible capacity of the building, while the Washingtonian Home in Boston, whose influence for good is already so extended, is for men alone.

In accordance with this apparent want, arrangements have been made by which there will be afforded to a limited number of self-indulgent women, whether addicted to opiates or stimulants, the necessary elements for their cure; namely, voluntary seclusion from temptation, the strictest privacy if desired, a location in the immediate vicinity of the city, and yet unrivalled for purity of atmosphere and beauty of scenery The house selected for the purpose is one constructed with especial reference to a comfortable residence during the winter; attendants will be provided of unexceptionable character, and but few patients will at present be received. For further information application may be made to the Secretary of the Commission, Dr. H. R. Storer, at Hotel Pelham, Boston; the other members of the Board being Hon. Josiah Quincy, Jr., of Boston, and Dr. Alfred Hitchcock, of the Governor's Council, of Fitchburg. It may be stated that the step now taken has the cordial approval and endorsement of His Excellency Governor Andrew, Judge Hoar of the Supreme Court, Drs. James Jackson, Jacob Bigelow, John Jeffries, H. I. Bowditch, J. Mason Warren, Tyler of the Asylum at Somerville, Jarvis of Dorchester, and others of our more prominent citizens.—*Boston Medical and Surgical Journal.*

ORIGINAL COMMUNICATIONS.

CLINICAL LECTURES ON DISEASES OF THE EYE.

By E. L. HOLMES, M. D., of Chicago,

Lecturer on Diseases of the Eye and Ear in Rush Medical College, and Surgeon of the Chicago Charitable Eye and Ear Infirmary.

The Conjunctiva,—Anatomy, Physiology, and Pathology.

GENTLEMEN:—We have before us to-day several cases, presenting different abnormal conditions of the Conjunctiva. I wish to urge upon you a careful study, not only of these cases but especially, of the whole subject of conjunctival inflamma-

tion. If not the most interesting, it is practically the most important part of our course, since, in the West, the number of cases of conjunctival inflammation and its sequelæ is far larger than the aggregate number of cases of all other diseases of the eye, which you will meet in practice.

I am convinced more patients become blind from the effects of these diseases than from all other causes. It would be difficult to estimate the physical distress endured for weeks and months by thousands of patients, afflicted with ordinary "sore eyes," in the Northwestern States. No one, except those brought in frequent contact with this class of patients, can imagine their mental sufferings in view of their own dismal prospects for the future, and of the sad condition of their families deprived of their support and care. Parents, thus suffering, are often forced to leave their children without moral and mental culture, and without restraint, and with evil habits such as idleness and ignorance always bring. Children in large numbers with diseases of the eye, neglected or improperly treated, have been left blind for life, or with so little vision as to be unfit for the ordinary duties of life.

Few diseases in the West are so universally considered of little significance, and yet become the cause of so much misery as those of which we are now speaking. The thought, that upon you will hereafter devolve the responsibility of treating such cases, will lead you, I hope, to study this subject faithfully. That you may the better understand the progress and treatment of these diseases, I shall first call your attention to a few points regarding the Anatomy, Physiology and abnormal conditions of the Conjunctiva.

If you dissect this membrane from the eye-lids and from the globe, you will have a circular piece of tissue, about two and a half inches in diameter, with an opening near the center, corresponding to the cornea. The Conjunctiva resembles, in its general structure, the other mucous membranes of the body. It is composed principally of fusiform and star-shaped cells and areola tissue. These cells are furnished with exceed-

ingly minute tube-like appendices, which anastomose freely with those of other cells. The epithelium consists of a deeper layer of elongated cells, covered with a delicate layer of flat, hexagonal cells.

There are three distinct portions of this membrane, differing from each other not only in position, but in structure. The first portion, covering the cartilages of the lids, is composed of an epithelial layer and a firm areola tissue; it is provided with large numbers of papillæ, which give it under the microscope its peculiar velvety appearance. The second portion, the duplicature, comprises the loose folds, varying in extent in different individuals, which lie between the points where the Conjunctiva leaves the lids and joins the globe. It contains few papillæ but very large numbers of mucous glandulæ, somewhat resembling minute bunches of grapes. The semilunar fold at the inner angle of the eye is of the same structure as this portion of the Conjunctiva.

The third portion covers the anterior part of the sclerotica. It is transparent, less firm and thick than the palpebral portion, and has neither papillæ nor mucous glandulæ. Its epithelial layer extends over the cornea. The annular portion of the sclerotical conjunctiva, which encroaches upon the cornea, and which can be seen as a transparent ring at the circumference of the cornea, is called the limbus conjunctivæ. Between the sclerotica and conjunctiva is a thin layer of submucous areola tissue called the capsule of Tenon, the anatomy of which is of some little importance in operating for strabismus and in removing the eye.

The vessels which supply the Conjunctiva with blood are branches of the ophthalmic artery and the facial branches of the external carotid. The vessels of the sclerotic portion of the Conjunctiva are scarcely visible to the naked eye. The larger vessels, seen in this portion of the eye, belong really to the submucous tissue.

Branches of the fifth pair of nerves are very freely distributed to the palpebral portion of the Conjunctiva. The folds

between the lids and globe possess comparatively little sensibility. The intimate relation of these nerves with the nerves regulating the motions, secretions and other functions of the eye, is shown by the manner in which irritation of the mucous membrane will produce a flow of tears, involuntary motions of the facial muscles, and closing of the lids.

The Conjunctiva undoubtedly furnishes the largest portion of the lubricating fluid, by which the movements of the lids and globe are facilitated. That the lachrymal gland contributes but a small part of this fluid may be shown by the fact, that the extirpation of the gland does not diminish the ordinary amount of moisture of the Conjunctiva.

In treating of conjunctivitis I shall at present confine my remarks principally to those forms, of it which you will most frequently meet in practice, viz.: the catarrhal, muco-purulent, purulent and scrofulous. But before we enter upon the study of these varieties of disease, it will be well to consider generally the progress and effects of inflammation in the Conjunctiva.

The inflammatory action, however produced, seems to commence first in the spindle and star-shaped cells, and in the deeper cells of the epithelium. These cells take on an increased activity, becoming enlarged and filled with granules and serum-like fluid; as the process continues, the minute appendius of these cells also become enlarged and filled in the same manner. As a result of these changes there is an increased rapidity in the formation of new cells not only in the substance of the mucous membrane, but also in the epithelium. Accompanying this increased formation of cells, there is a congestion of the vessels and an infiltration of lymph into the tissues of the Conjunctiva, in consequence of which there is more or less swelling, which often extends to the whole substance of the lids. In proportion to the intensity of the inflammation there is a greater or less amount of secretion, composed of mucous and pus mingled with the other fluids of the eye. The relative quantity of pus and mucous depends upon the intensity,

and possibly upon the character, of the inflammation, as in a case of mild muco-purulent conjunctivitis in which there may be scarcely a trace of pus in the discharge: or in a case of purulent inflammation in which the discharge is composed almost wholly of pus.

An inflammation of the Conjunctiva even in its severest forms may terminate in resolution and leave the eye in perfect health, or it may run a rapid course terminating in the destruction of important tissues, with vision to a greater or less extent impaired. It is curious to observe the differences in the effects of an inflammation in different cases, apparently analogous. As for instance, you may examine a neglected case of purulent conjunctivitis in an infant, in which you find sloughing of the cornea a week after the attack; in another case, apparently precisely similar, you may find the cornea uninjured, even though the disease may have existed nearly a month.

One of the most frequent unfavorable results of conjunctivitis is atrophy. The infiltration of lymph into the substance of the conjunctiva produces pressure upon the nerves, vessels, glandulæ, and disarranges the process of nutrition. Finally, as the products of inflammation become absorbed the Conjunctiva remains not only atrophied but also changed as regards the character of its tissues. Occasionally, as in the very remarkable case we have seen in the Clinic to-day, the Conjunctiva is not only so much atrophied as to pass direct from the edges of the lids to the globe, but is also transformed to a perfectly translucent, parchment-like membrane, covering the cornea. All the secretions of the eye are arrested, and the surface of the globe is perfectly dry. The finger rubbed upon the cornea produces no irritation. In other cases the atrophy occurs without so great transformation of structure. The functions may not be excessively deranged and yet the lids appear narrower and shorter than natural. In some cases the meibomian glands and the follicles of the cilia are destroyed; in others the roots of the cilia are displaced by the absorption of

the surrounding tissues; in consequence of which, the cilia grow in an abnormal direction towards the globe, causing much discomfort to the patient, as in Trichiasis. Sometimes where there is great relaxation of the external tissues with contraction of the Conjunctiva, the whole lid is turned in, bringing all the cilia in contact with the globe. This condition is called Entropion.

Occasionally in this country—much more frequently in Europe I have reason to believe—there is formed, as a product of inflammation, a false membrane upon the surface of the Conjunctiva, especially of the lids. This exudation may be simply attached to the surface, or it may also be formed in the substance and upon the surface of the Conjunctiva as in the case of true diphtheritic conjunctivitis.

Before atrophy occurs, as just described, there is very often hypertrophy of the Conjunctiva, especially of the folds, lying between the lids and the globe, and of the plica-semilunaris. While this condition exists, the Conjunctiva, except upon the globe, is covered with elevations, composed of cells and a jelly-like exudation. This condition is termed Trachoma—or in common language, "granulated lids." On the lids these "granulations," according to some writers, are simply hypertrophied papilla; at the duplicature of the Conjunctiva, they are composed principally of jelly-like granules.

The processes, as above described, are liable to be influenced by other diseases of the system, as is often observed in cases of scrofulous diathesis, of small pox, measles and other eruptive diseases. Phlyctenular conjunctivitis—Herpes conjunctivæ—is seldom found except in patients suffering more or less from strumous diathesis. The small elevations upon the Conjunctiva peculiar to these complications, seem to be produced in nearly the same manner as the "granulations" above described. The inflammation appears at first to be confined to small circumscribed points, where by the increased formation of cells and exudation of lymph, small elevations are formed. These elevated points often ulcerate, leaving an ir-

ritable surface, from which the inflammation extends to other parts of the Conjunctiva and cornea, with the same results as in other forms of conjunctivitis.

These few explanatory remarks will enable you, I trust, to understand even by simple inspection, what processes have produced the abnormal changes, you will observe in very many cases to be brought before you this winter.

PYÆMIA, OR LEUKÆMIA.

By GEO. R. WEEKS, Surgeon of U. S. V.,
In Charge of Church Hospital.

Church U. S. Military Hospital, Memphis, Tenn., Sept. 8th, 1863.

Having recently been much interested in various pathologi cal conditions resulting in Pyæmia, Leukæmia, or Leucocythæmia, and believing that I have observed some facts of interest in this disease, I submit the following observations, taken at the bedside, with a view of calling attention to the true nature and conditions found in those affected by this particular grade of action. If I can be able to contribute in the least degree to this end, I shall feel myself amply rewarded. I believe it closely allied to *Hospital Gangrene*, and blood poisoning, and generally has appeared to be the sequence of these diseases.

The ideas that I shall present were taken from the observation and treatment of *one hundred and seventy-five* cases of Hospital Gangrene, one hundred and fifteen of which were observed and reported on by me, in Louisville, Ky. Six occurred in the 17th Army Corps Hospital, at Vicksburg, Miss., of which I had charge, and fifty-four at this Hospital, during the month of August, with what results will be shown by the following table.

Summary of Cases Treated by Bromine, Locally, and Their Results,

No. Treated.	No. Recovered.	Died.	Died of						Flesh Wounds.	Flesh Wounds, Bone Involved.	Average time of Arrest.
			Gangrene.	Pyæmia.	Thrombus & Sepsis of the Blood.	Mechanical Pneumonia.	Cellulitis.	Diarrhœa.			Days.
146	134	12		3	5	2	1	1	104	42	4.26
Summary of Cases Treated Without Bromine, and Their Result.											
29	20	9	4	3	1	1			24	5	18.8

Fifty-three of these were treated locally by pure bromine, and the average time of arrest was 1.92 days, seldom requiring a second application. Ninety-three were treated by comp. bals. of bromine, average time being 8.66 days; and twenty-nine cases were treated by the usual methods, the average time of arrest was 18.8 days. All had the same constitutional treatment, and were alike situated in other respects.

The facts noticed during the treatment of these cases point to the following views with regard to its pathology. That Hospital Gangrene is produced by a *specific animal poison*, and that it only enters the system by inoculation upon a traumatic surface. That for a variable time after it is deposited upon or in the sore, it is local in character, after which it enters the blood through the agency of the absorbent system, and changes its constituents both vitally and chemically. I have designated this the stage of Toxæmia, in which the blood is morphologically changed, the result being thrombus, which in my opinion, is the plastic portion of the blood, aggregated and semi-organized, necessarily rendering the remainder aplastic and of little use to the economy in the work of repair. I have many morbid specimens now in my possession, that clearly establish the truth of these propositions, in illustration of which allow me to cite a few cases.

Adam Brangle, a private of 1st U. S. Inft'y, was brought to the 17th Army Corps Hospital, at Vicksburg, Miss., with gangrene of stump of right arm, which had been amputated several days previous to his admission. Upon examining him, I

diagnosed Mechanical Pneumonia, of right lung. He complained of pain in the heart, and over lower lobe of right lung, which then gave a flat sound, with dulness extending upward and with entire loss of vesicular resonance. No crepitus was heard in the part or above it.

I treated the arm locally, with pure bromine, which arrested the gangrene promptly, and the sore continued to granulate feebly until near death. The pulmonary difficulty continued upward until the entire right lung was involved and half of the left, when he died. I examined him carefully, and noticed his symptoms three times a day, myself, during the time he was under my care, being much interested in his condition. Autopsy twelve hours after death. The right lung was very much enlarged, and so heavy that it readily sank in water, so large that it filled the right side of the thorax entirely. Upon section it presented innumerable dark colored points of all sizes, which were traced back to where they could unmistakably be seen to be in the pulmonary artery. I hazard little by saying that very nearly all the vessels in the right lung were occluded by thrombi. Also a portion of the left was in the same condition, and in none of them was there any signs of a retrograde movement, or softening. This was a rapid case, and one that finely illustrates the mode of dying, which was undoubtedly from obstruction of a purely mechanical nature, so far as the lungs were concerned, producing an excess of carbonic acid in the blood, and a deficiency of oxygen from pressure on the vesicles and obliteration of air space. This is the first stage, or one necessary link in the pyæmic process.

2nd. James A. Beaver, private, co. A, 33d Iowa Infty Vol., was admitted to this Hospital July 30th, 1863, with gangrene of the ankle, involving the ankle joint and instep. I examined him August 8th, and diagnosed thrombus and septic poisoning. I made an unfavorable prognosis. Gangrene had been present since July 17th, and was promptly arrested by the use of bromine, locally, August 12th, but no repair was established. The wound kept clean and had no fœtor. He died August 18th. Autopsy ten hours after death.

The pulmonary vessels were filled with a dark colored, semi-fluid substance, and at points portions of unsoftened thrombi yet remained. In some of the larger vessels thrombus was still entire, in others, where the pressure was greatest, softening had commenced. Softening was also observed in the parenchyma, always most advanced in that part nearest the vessel. I found a large thrombus in the left side of the heart, more than half of it softened, and softening of the walls of the heart, with which it came in contact. It looked of a purple color, and had a gangrenous odor, and was easily broken down between the thumb and finger upon moderate pressure. I take it that this case points to the transition stage from thrombus to true pyæmia, and marks the process quite clearly.

Death perhaps was produced by ichoræmia, depraved or perverted nutrition, caused by the septic condition of the blood, the morbid element of which was indebted to softened thrombi, and the product returned to the general circulation rendered it more poisonous.

3d. J. H. Sutton, private, co. I, 36th Ind. Infty Vol., passed through both the above mentioned stages, and died of the next or of true pyæmia. Metastatic abscesses were formed in the lower lobe of right lung, of all sizes from a millet seed to that of a walnut, and also thrombi, entire and softening, forming new centres for abscesses. The man had been sick a long time, and had gangrene in popliteal space, which had been arrested previous to death some considerable time, but not in time to prevent ichoræmia.

I cite these three cases as marking the stages leading to the state of pyæmia distinctly and clearly. I have endeavored to present the facts as I have observed them, and let the results follow. Post-mortem appearances are nature's teachings, before whose power our most subtile theories and ingenious hypotheses must bow in humble submission. I have examined all that died, in every one of which I have found thrombus in the heart and lungs, in some of the stages before mentioned, in consequence of which I am inclined to look upon them as

a necessary condition. I am fully persuaded that Virchow is right in calling it leukæmia, as I shall endeavor to prove hereafter. These remarks are not only true of gangrene, but are equally so of all that class of diseases arising from blood-poisoning, in which also ichoræmia secondarily plays an important part. I am not sure but that it will enable us to explain all the phenomena presented. The accompanying symptoms are very analogous to those arising from the bite of a venomous serpent, and perhaps what will cure one will arrest the other. I said in the commencement that, primarily, I believe it to be local, and that it passed into the blood by the agency of the absorbents, when toxæmia was produced; but how is this brought about? In what manner are these changes produced? I answer, 1st, By contact of the morbid agent with the traumatic surface. 2d, Transformation of cell contents, which I am inclined to believe is the result of oxydation. 3d, Absorption of the ichorous product, which causes a retrograde movement in the part and also in the constituents of the blood, which I think is chemico-vital in character. The corpuscular change is quite apparent by the aid of the microscope. The red corpuscle loses its hæmatine, which becoming granular, is deposited in a circle, and aggregated around the outside of the field. The white corpuscles are very abundant and occupy the whole surface. Chrystals of ammoniacal salts are formed in abundance, and an occasional fungi may be seen. Virchow teaches that it is not possible for substances, or rather particles of matter to pass through the lymphatic glands, as in the case of cinnabar and tattooing, they are arrested and detained there. I cannot say how it is accomplished, but of the fact that the morbific agent does pass the glands, I am well satisfied, and as these are the last row of sentinels to contend against, I can see no reason why it should not proceed onward to the blood. I have a case in point.

James Scott, private, co. A, 1st Mo., died at this Hospital, on Sept. 3d, in whose thoracic duct I found a well-developed thrombus. I sent it to Surgeon Brinton, U. S. V., Washing-

ton. It was about four inches long, and largest in that portion that occupied the receptaculum chyli. It is the first case that I have ever seen or heard of. The glands were enlarged, indurated, and of a dark color, as if filled with pigment granules, which I very much suspect they were. The ichor undoubtedly had passed, as its effects were demonstrated by thrombus in the duct. If so the whole process corresponds very nearly to Virchow's idea of their function. This case conclusively presents three very important facts, viz.: That the poison, whatever it is, passes through the lymphatic gland; that it is capable of producing thrombus upon the other side, and that the morbid element does not reside in the pigment but in its ichor. I am of the opinion that this settles a vital point in the pathology of leukæmia.

The death of the parts afflicted by gangrene is a molecular one, and I believe should occupy an intermediate position between ulceration and mortification. It is always accompanied by asthenia.

Of the cases observed here during the month, the average temperature of the body was 89° Fahrenheit, and the number of pulsations were 101, which significantly pointed to the manner in which they die, and to the indications for treatment. In he formation of thrombus I have invariably found them of the shape of the vessels, upon the right side, and globular upon the left, and in the latter seldom extending into the vessels. I have one of the left auricle now, weighing 482 grains, and one of the right side, representing every branch of the pulmonary artery, which had its attachment to the right ventricle.

It will be inferred from what I have said previously, that I regard the disease as curable, before its consequences are constitutionally developed. This is exactly what I at present believe. I can see no reasonable prospect of reaching it afterwards and would not know how to make a rational prescription, with my present views of its pathology, other than support. Upon the appearance of thrombus in the *heart* and

lungs, which is easily detected by the physical signs, hope with me ceases. Some may recover but I have not seen them. The rational remedies indicated I believe to be, oxygen, fluorine, chlorine, bromine, etc. I expect much from the judicious application of the former, and shall try it as soon as opportunity offers. Fluorine is too dangerous. Chlorine can only be obtained in a fluid state, under great pressure, or in the form of mechanical mixture, hence the selection of bromine, which is in the best form, and easiest of application, and over which condition I believe it to have a specific influence. I am of the opinion that it will arrest gangrene wherever it can be brought in contact with all the pulp or pultaceous matter. This is very difficult to do in the burrowing form of the disease, and also from the nature of some wounds, it is nearly impossible to reach every part with the remedy.

I have been industriously seeking an agent that would destroy the poison in the blood, or counteract its effects, but up to the present time have found none. I first tried the hyposulphites, then bromine by inhalation, and then internally. I have observed no beneficial effects from the hyposulphites, or the inhalation of bromine, but am inclined to believe that the internal administration of bromine, is of some value, how much I am unable yet to determine. I am now putting it to a severe test, in all the cases under my care, and noticing its effects closely with a view to settling this point. I am using the following formula: ℞. Bromine, Comp. Sol. of, ʒ ij; Aqua Distillata, ℥ ij; Syr. Simplex, ℥ ij; Mix. S. Teaspoonful every six hours.

I am favorably impressed with the remedy, but will not be able to speak with certainty until I have tried it for a longer period, and observed its effects more closely.

EDITORIAL AND MISCELLANEOUS.

The Principles and Practice of Ophthalmic Medicine and Surgery. By T. WHARTON JONES, F. R. S., etc. With 117 illustrations. Third American Edition, with Additions. Philadelphia. Blanchard & Lea. Vol. 3. Scott, Keen & Co., Chicago.

This work of Mr. Jones has already been noticed in the *Journal*, and has become a standard, both in England and the United States. The present edition is somewhat improved from the last, and brought fully up to to the most recent views on the subject. It ought to be in the library of every physician who treats diseases of the eye. D. B.

Conservative Medicine as Applied to Hygiene.—DR. FLINT has favored the thinking portion of the medical profession with another of his trenchant articles on "Conservative Medicine"—those principles "which lead the practitioner in dealing with diseases to preserve, develop and support the vital powers." In his last essay, in the *Am. Med. Journal*, he considers these principles as applied to Hygiene, both in health and disease. We have only space for the salient points.

"To weaken the powers of life, or impair the constitutional strength, is never the design of measures to prevent disease."

There is no such condition as an "overplus of health."

Bleeding and purging as prophylactics have no warrant in modern science. Not even gestation warrants either of them.

Restricting the diet is equally repugnant to sound philosophy either prior to surgical operations or as prophylactic of contagious diseases. Zymotic diseases do not subvert this rule.

"Wear and tear" of the mental faculties, under it may be the stimulus of the most laudable ambition, notwithstanding the individual is regular in his habits, temperate and moral,

will beget disease, as witness tuberculosis, Bright's diseases, diabetes, etc. It is a dangerous egotism of the individual that he can bear an unlimited duration of work—mental or physical. The system will, sooner or later, break down under unremitted labor even though the powers are not seemingly at any one time overtaxed. It is a fallacy that mental and physical exertions counterbalance each other. The exhaustion incident to excessive mental labor is aggravated by the superaddition of muscular fatigue.

The evils of overfeeding, "gormandizing," are mental and moral rather than physical. The healthiest, ablest and best men and women have been good feeders. An excess of ingesta over the absolute wants of the economy is not necessarily an evil, there being provision made for the disposition of an overplus, but none against a deficiency of aliment. Generous living constitutes an important part of the curative management of very many diseases.

Hunger, appetite and taste are designed to govern dietetics. Watching anxiously the progress of digestion is extremely fallacious, and conduces to digestive disorder. The question to the physician: "What drugs shall I give to effect a cure?" is infinitely less important than that other: "What hygienic relations will contribute to the recovery of the patient?"

Disease does not stand in the way of patients from starvation. Deficiency of assimilation originates the symptomatic phenomena in acute diseases, to a greater or less extent, and is thus a greater or less source of danger.

It is a constant and important element. In chronic diseases it is a paramount element. The giving of about all medicines is to be guided by their influence upon the energy of the nutrient and assimilative processes. This is peculiarly true in all continued and "typhoid" fevers.

"Under all circumstances, a chronic affection is less likely to be prolonged, serious lesions of structure are less likely to take place, and a fatal termination is postponed in proportion as the vital powers are preserved." All hygienic measures are to be conjoined.

Air is a grand element of hygiene. "Free and daily exposure is important as a means of preserving the vigor of the body in health; may it not be equally important as a means of keeping up the vital powers in disease? Atmospherical vicissitudes, even in disease, there is reason to believe are hygienic. Prevailing apprehensions on the subject are much exaggerated. Mental conditions require careful management. The reciprocal agencies of mind and matter can scarcely be overrated. The resisting power to disease is largely mental as well as physical.

The emotions must be properly controlled by the physician. Confidence and hope are wonderfully potent. Prof. Flint admits the clergy as subsidiary to the office of calming the patient's mind. He has evidently been more happy than we have in this respect. To us this is a *questio vexata* still.

Hospital arrangements are too often unfavorable to proper mental hygiene. All this is being corrected in the best managed and controlled institutions.

We look anxiously for Prof. Flint's promised work on Practice, as likely to supersede wholly the Empiritical treatises now in vogue. Chicago Journal

---

Medical Logic. An Introductory Lecture to the Med. Dep. of the Univ. of Mich. Session 1863–4. By S. G. Armor, M. D., Prof. of Instit. of Med. and Mat. Med.

The unknown friend who forwarded to us this philosophical brochure has our sincere thanks. We congratulate Prof. Armor on both the sound logic and common sense of his lecture, and the fact that the Detroit Medical Society no longer exists to denounce him by resolution for the promulgation of the views he entertains on the points discussed.

The relics of that old organization ought certainly to have their professional bones stirred in their coffins by the conviction expressed by the learned lecturer, "that in no department of human inquiry is there so much *bad logic* as in the investigation of questions relating to Medical Science." Witness

this and lament, O Disembodied Spirit of the Detroit Medical Society!

We are all too apt to assume, as a postulate, that to be sick is to be visited by the Angel of Death; that the natural history of disease is death; that the warfare is therefore between *death* and *drugs*. With minds thus educated, *post hoc* is always *propter hoc;* and hence the quackery, the cures, the "specifics" which afflict our race. It is my firm conviction that if we could induce people to respect *Nature* more, and boastful pretenders of the healing art less, it would rid the world of a vast amount of bad logic. They would be prepared to reason from a new stand point; the fierce schisms of sects and schools would give way to Rational Medicine; we would have no occasion for another edition of Bigelow's "*Paradise of Doctors*," Nature and the Doctor would respectively occupy their true positions,—the one as the minister and handmaid of the other.

Again take this:

False and incompetent witnesses should be even more rigidly excluded from the Temple of Science than from our Temples of Justice. They invest error, for the time being, with all the power and majesty of Truth, and thus destroy the harmony which should ever exist between Truth and the highest development of our race.

By the term *evidence*, I mean to include, in a general sense, all the means by which any alleged matter of fact is established or disproved. In Medical Science, *facts*—not hypothesis—are what we are after, and this, as we shall see, is a striking characteristic of Rational Medicine as contra distinguished from all modern systems and theories. Facts, then, being the object of our research, and these being derived from others, as well as from our own observation, the importance of carefully considering the ground of our belief as based upon *reliable testimony*, becomes at once apparent. Nothing but a rigid adherence to the justly interpreted laws of evidence, will prevent us from being constantly led into error. But for the supremacy of induction, as the only reliable mode of discovering medical truth, Medical Science would forever grope her way in the dark. Induction begins with facts; deduction begins with ideas. By the former mode of reasoning, Medical Science has always made real and lasting progress; by the latter the most visionary one-idead systems have been established upon the most illogical, irrelevant, and inconclusive reasoning,—rules drawn from the most narrow and selfish views.

These errors in reasoning have their origin in the very nature anp constitution of the human mind. There is an inherent tendency to abstract and generalize, and our generalizations are too often hasty and immature.

The author avows himself an advocate of Rational Medicine.

It is mortifying to observe, in our own journals, the headlong haste with which, every day, some new remedy is taken into favor, eulogised and applauded as a catholicon for all the ills to which human flesh is heir, without caution, without selection, without discrimination, and without reference to the rules of a safe logical induction from reliable premises. All such observations, all such teachings and records, should be rigidly excluded, as unfit to form the basis of sound conclusions. * * * * * * * * * *

This is the glory of Rational medical science. It has no theory to maintain, no creed to enunciate. It follows *facts*, well observed, carefully studied, and based on a sufficiently wide range of observation, let them emanate from what source they may, or militate against whose theory they may. In this it differs from all other one-idead systems of practice, which are "based on an exclusive dogmita, to the rejection of the accumulated experience of the profession." Our science, let it ever be borne in mind, does not rest on abstract medical doctrines. Doctrines, as such, we have none; theories, none; no "system," as such, to maintain; no creed to follow. Rational medical science plants itself on the notation, arrangement and classification of facts. Hence, I affirm, its votaries work in the only true direction of a safe and rational progress. Where facts lead them, there they go, unmindful of any creed, or doctrine, or school. Rational medical science is unlimited in its resources. Untrammeled by the dogmas of schools or creeds, we boast of a science and art purely and truly *Eclectic*.

He has a want also for which the *debris* of the Society aforesaid should severely censure him by resolution:

What we want,—what medical science requires above all things, is manly independence of investigation, associated with a *rational skepticism in the reception of testimony*. Gœthe has an excellent aphorism defining that state of mind which he calls "Thatige Skepsis"—active doubt. "It is a doubt which so loves truth, that it neither dares rest in doubt, nor extenguish itself by unjustified belief." This concisely and clearly expresses the doctrine I have aimed to inculcate. Extreme skepticism and bigotry are alike inimical to the progress

of all true science. The one is too apt to reject; the other too slow to change: the one makes but little progress, because always lost in the wilderness of universal doubt; the other is incompetent to determine the fair and legitimate bearing of testimony, because obstinately and unreasonably wedded to particular dogmas, creeds and opinions. But an easy *credulity*, in matters of science, is even more objectionable than either. It believes all things—adopts the latest fashions—runs the rounds of empiricism—bleeds and purges to-day for everything, and to-morrow gives brandy and beef-steak;—abandons these extremes for steam, or pepper, or electricity, or sugar of milk potentialized by trituration, until the last and latest Vision, like the ideal hero of the Æneid, escapes in a cloud from the scene of action, and leaves its votary to seek for other aids and better lights to guide him.

Personally we do not know Prof. Armor—neverthelefs he excites our deepest anxiety. Fogyism is rampant in his present section, and we warn him that it will never do for him to there enunciate such "paradoxes and dogmas,' as are contained in the lecture before us. We look for yet another catastrophe at Ann Arbor. There are Dogberrys and Jack Cades all around him. Let him take our warning in time. Let Gunn load himself for another battle, and let both take Sager counsels. He may escape by Ford-ing, but the Palmer (*no* from the Holy Land,) and the Black Douglass will surely pursue him with the bloodhound beagles of the Regency.

A Case of Neuroma of the Optic Nerve, with Remarks and Illustrations. By JOHN A. LIDELL, M. D., Surg. U. S. Vol., Prof. Anat. Nat. Med. College. Second Edition. New York. 1863.

Our thanks are due the author for a copy of this very interesting pamphlet. It describes probably the only case on record of Neuroma of the Optic Nerve, and almost the only one involving a nerve of special sense. It should be borne in mind that not every tumor developed in connection with a nerve is properly neuroma.

We extract from the article a few remarks of a descriptive and diagnostic character regretting that our limits forbid in-

sertion of the details of the case in full, which was permanently cured by extirpation.

These nerve-tumors vary in size, from a pin-head to a melon. In shape they are regular, and either oval or elongated, their long axis always corresponding with the direction or course of the affected nerve. In structure, they are either cystic, which is the exceptional form, or cystico-solid, or entirely solid, (sarcomatous,) the latter being the common form. It is believed by some surgeons that, when the solid growth reaches a considerable size, one or more cysts, or cavities, filled with yellowish, brownish, or reddish-brown liquid, are apt to form in the inteaior, their formation being apparently due to a process of disintegration having commenced therein. Sometimes the tumor appears to be composed of concentric layers. In color, the interior structure varies from white or grayish-white, to a yellowish or reddish-yellow hue. In consistence, they vary from the denseness of fibrous tissue, and the hardness of cartilage, to the soft, fluctuating feel of a sero-cyst. With regard to mobility, *neuromata* are, for the most part, *distinctly movable in the direction of their transverse diameter*, but not in the direction of their long diameter, and this mobility is seldom or never destroyed by contracting adhesions to neighboring parts. Every effort to move these tumors in the course of their long diameter is productive of great pain. The skin investing these morbid growths is never discolored, and the cutaneous veins are never enlarged and tortuous, except the tumors have attained an unusual size; indeed, the integument in general is never affected by this disease in any other way than by mechanical pressure. These nerve-tumors are surrounded or invested with a distinct capsule formed from cellular tissue, condensed by the progressive expansion of the swelling, and it frequently happens that, within this covering, a second can readily be distinguished, formed by the expanded sheath of the parent nerve. *Neuromata never invade the contiguous parts by infiltrating them with their own peculiar substance, and thus impoeing on them their own peculiar structure.* They invade the neighboring parts only by mechanically pushing them away as they expand, and by slowly producing absorption of them from long-continued pressure. *Neuromata never infects the lymphatic glands*, neither in its own neighborhood nor in remote parts of the body, *and when properly excised it never returns.* In all these respects it differs widely from cancer, and is a disease entirely dissimilar thereto in its real character. Neuromatous tumors are commonly found single, though they

are occasionally multiple, and in very rare instances, according to the monograph already referred to, as many as several hundred are found in the same subject. The *painful subcutaneous tubercle*, three examples of which are referred to by Chesselden, is one of the most frequent forms of neuroma. Nerve-tumors, though commonly, are not always painful. The simple is much more liable to be painful than the multiple form of the disease. The pain, when present, has a peculiar character; the torture is agonizing, and the pain darts "along the trunk and branches of the nerve, with all the suddenness of an electric shock;" the pain is paroxysmal, and the exacerbations may be produced by pressing upon, handling or jarring the tumor, by strong mental emotion, by fatigue, and by changes in the hygrometrical condition of the atmosphere, disappearing in dry and clear, and coming on again in damp and cloudy weather. In respect to origin, neuroma is considered to be either spontaneous or trumatic; but whether spontaneous or traumatic, we are no nearer the truth with regard to the special perversion of the nutritive function, upon which the growth of such masses depends. Traumatic neuroma is most frequently seen in the stump of amputated limbs, and its treatment should be conducted on precisely the same principles as that of the spontaneous form of the disease.

Neuromata generally increase in size slowly and steadily. It is said that they never retrocede or disappear spontaneously. Medicines, whether applied locally, or taken internally, do not appear to possess the power to stop, or even to retard their growth materially. Expirpation affords the only certain cure, and extirpation by the knife, or excision, is preferable to that effected by any other method. Excision of a portion of the parent nerve, together with the tumor, has also been recommended, but I can not conceive that this procedure is often necessary. Sometimes, by the exercise of great care and skill, the tumor can be dissected away from the nerve with which it is in contact, without dividing said nerve, a feat which Velpeau accomplished in a case of neuroma sciatica. These tumors should not be excised, unless they are painful, or cause inconvenience to the patient by their size or weight.

* * * * * * * * *

Neuroma is distinguished from carcinoma by the following facts: 1. It never affects the surrounding parts otherwise than by pressure, whereas carcinoma involves the neighboring tissues by infiltrating them, and imposing on them its peculiar structure. 2. It never contaminates the neighboring lymphat-

ic ganglia; carcinoma does. 3. While it impairs the patient's general health by pain and distress, causing pallor, emaciation and debility, it never produces the true cancerous cachexy by specific infection of the system; carcinoma does produce such a result. 4. It does not return after excision; carcinoma does. 5. The pain of neuroma is neuralgic (electrical and paroxysmal) in character; the pain of carcinoma is not.*

Obituary Record.—It is with deep regret that we find in the *Boston Journal* the announcement of the death, by apoplexy, of our old friend Dr. Geo. Hayward. Dr. H. was one of the oldest and ablest surgeons of Boston, and a most hospitable, public-spirited, and high-minded gentleman. He was always foremost in aiding all useful objects, and his death will be a severe loss to the city of Boston and to the profession of this country.—*Med. News.*

Enterotomy.—Dr. Reali relates the following case: A countryman of limited capacity had introduced a piece of wood into the rectum, nine days before he applied to the Hospital of Orvieto, complaining of severe pain in the abdomen. On exploration the finger was able only just to reach the point of a piece of wood lying surrounded by the turgid mucous membrane in the direction of the hollow of the sacrum. Numerous attempts were made with various instruments to extract the foreign body without success, and, as the patient suffered greatly, an incision was made into the left iliac region. The finger having been introduced, it was found that the foreign body, having passed into the sigmoid flexure, the latter was distended, and forced to the mesial line, the body it contained rising as high as the navel. The intestinel was incised, and a truncated cone of chestnut wood (irregularly shaped, and measuring twenty-five centimetres in length, and from nine to ten in diameter) was removed. The wound in the intestine was closed by Jobert's procedure, and oily purgatives were administered. Great meteorism, entero-peritonitis, and an iliac abscess were among the sequelæ; but the patient recovered, and remained well when seen two years afterwards.—*Med. Times and Gaz.*

Strangury from Cantharides.—Dr. Amuille, of Paris, extols the method of treatment introduced by Dr. Mulock, of

*Vide Smith's monograph.

Dublin, for the cure of strangury from cantharides. This consists in giving liquor potassa, in doses of half a drachm, in gruel or flaxseed tea, every hour. Dr. A. says that he never finds more than two or three doses required to effect a cure.—*Med News.*

Mode of Preventing Injurious Action of Lead Pipes on Water.—The importance of discovering a really efficient means of preventing the injurious action of lead pipes on water is universally acknowledged, and the experiments of Dr. Crace Calvert have proved beyond question that no proposition hitherto brought forward has been calculated to remedy the evil complained of. A discovery, however, has now been made through which the water supplied by leaden pipes may be obtained by the consumer as pure as from the original source. Dr. H. Schwartz, of Breslau, has discovered a means by which the portion of the lead forming the interior surface of the pipe may be converted into an insoluble sulphide, the natural consequence being that the water passing through will be as free from contamination as if glass were used. The means by which Dr. Schwartz effects this conversion are extremely simple. He simply passes a strong solution of the sulphide of an alkali through the pipe to be acted upon, and the process is completed. This solution, which is either a sulphide of potassium or of sodium, is used at a temperature of about 212° F., and is allowed to act upon the metal for from ten to fifteen minutes. It is stated that, in practice, the boiling solution of caustic soda and sulphur is found to answer every purpose.—*Med. Times and Gaz.*, Sept. 26, 1863, from *Mining Journal.*

Sewage:—Sir Edward Bulwer Lytton made lately the following interesting remarks on this subject.—

"I remember, when I held the Colonial seal, the trouble and toil it cost me to secure from some distant islands a scanty supply of guano, while all the time, close at hand, a few of the London sewers were every year casting away into the Thames more than half a million's worth of a manure considerably more valuable for the general purposes of agriculture than that guano which ships were fitted out to bring home, in order that it might be retailed at a price which rather fits it for the phials of an apothecary than the fields of a farmer. I said half a million's worth of money was thus thrown away, but that is a very low estimate of the real waste. In Flanders,

for instance, where I have been lately, the value of sewage is calculated according to the numerical population, especially in towns. It is there calculated at £1 7*s.* a head yearly. In Belgium it is calculated at a still higher rate. So that, if the population of London be taken at 2,000,000, a means of increasing the productive wealth of the country (which, according to the estimate of Flanders, would be worth about £2,700,000) is exclusively devoted to poison the waters of the Thames, and administer gratuitous disease to her Majesty's metropolitan subjects. If we may condescend to take lessons from barbarians, the Chinese may in this respect be our teachers. The rapidity with which the Chinese bring almost any soil into cultivation, and, when bronght into cultivation, the enormous crops which they contrive to take from mere handfuls of land, have been the wonder and admiration of travelers. But the great secret of the Chinese is in the utilization of sewage. The proverbial fertility of Belgium is owing, in much, to the same cause. But it is not only the sewage of London which is wasted, but that of all our rural towns; although in them there appears a more impatient desire to remedy acknowledged abuses than seems to be the characteristic of city aldermen and metropolitan boards. When I consider how many populous towns there are in this country, I heartily wish we could send among them a few enlightened Chinese engineers to devise the best practical means by which our townsfolk might be enriched by the manure they could sell, and our farmers enriched by the manure they could buy. But in the meanwhile, until some such scheme is devised and agreed to, we must fall back on our friend the farm-yard dunghill, assisted indeed by various chemical manufactures, but never to such a degree as to supply its place. Professor Liebig is, no doubt, right in considering the chief art of productive husbandry to consist in the skilful application of manure. David Hume tells us, in one of his essays, that all the vast apparatus of our government has ultimately no other object or purpose than the distribution of justice, or, in other words, the support of the twelve judges. So it may be said that all the apparatus of productive husbandry has ultimately no other object or purpose than the distribution of justice to the soil—in other words, the application of that manure which gives back to the soil the nutriment we take from it, or supplies the nourishing properties which Nature had neglected to bestow. Eight hundred years ago there was a very learned dispute whether or not the earth was an animal. We have now discovered that

the earth is so far an animal that it requires to be fed, and will not bear to be starved. A remarkable instance of this truth is mentioned, by a celebrated agricultural authority, in some of the Southern States of America—such as Maryland and Virginia. In those States there were large districts of some of the most fertile lands in the world. The crops they yielded were prodigious, but, unluckily, the cultivators neglected the manure; they took from the land the alkalies and salts which they did not replace, and these districts have now become so hopelessly sterile that they have been altogether abandoned as a desert."—*Lancet*, Oct. 25, 1862.

Life in the Atmosphere.—James Samuelson, Esq., in a paper read before the British Association at their late meeting, remarked that no subject in natural history, except the allied one, the origin of species, had of late excited greater interest in the scientific world than the origin of the lowest types of living beings on the globe; and although the problem was far from being solved, yet the investigations that had accompanied the discussion had already served the useful purpose of throwing new light on the anatomy and life history of the mysterious little forms of which it treated. It was rather with the latter object, than in the expectation of being able to assist in the solution of the general question, that he ventured to lay before the association the results of investigations recently made. He had, for example, taken rags imported from various countries, and shaken the dust from them into distilled water, which he then exposed to the atmosphere; and, after describing generally the character of the living forms he had discovered in this pure water, he stated in detail the forms of life found in each kind of dust, and among these were some new species of Rhizopoda and Infusoria, and an interesting ciliated worm-shaped form, which he believed to be a collection of the larvæ of some other infusoria. The general results of the microscopical examination of these fluids between the 27th of July and 15th of August was as follows: In the dust of Egypt, Japan, Melbourne, and Trieste, life was the most abundant, and the development of the different forms was rapid. In conclusion, he observed that if he was correct in supposing the germs of the living forms that he had described to be present in the dust conveyed by the atmosphere, and in distilled water, it was worthy of notice that these germs retain vitality for a long period—a period of which he could not

pretend to define the limit. In his experiments they outlived the heat of a tropical sun, and the dryness of a warm room during the whole winter; but in Dr. Pouchet's case they retained their life 2,000 years, for he obtained his from the pyramids of Egypt, and then survived an oil of 400 degrees of heat. A main purpose which Mr. Samuelson had in view was to disprove the theory of spontaneous generation; and he suggested whether the great rapidity with which these germs are multiplied might not account for the spread of epidemic diseases. He did not profess to have any acquaintance with such diseases, but might it not be desirable to subject the atmosphere of hospitals to the microscopic test?—*Med. Times and Gaz.*, Oct. 3, 1863.

Obituary.—Charles P. Marsh, M. D., died at Kalamazoo, Mich., Nov. 17th, 1863, Æ. 35. Dr. Marsh graduated at the Med. Dep. of the Univ. of Mich. in the spring of 1851, and in the twelve years of his subsequent engagement in the practice of his profession, he had a variety and extent of experience which very rarely falls to the lot of a private practitioner. With his brother, Wells R. Marsh, M. D., now a Medical Director in the army, he was solicited, soon after graduating, to take the medical charge of the colony of Hollanders, established in the region of Black Lake, Ottawa Co., Mich., under the auspices of the Rev. A. C. VanRaalte. Some six thousand or more of these emigrants, mainly of the better class, were in a few months removed from the old country and located in the dense forests, as yet untouched by the axe, but which the far-seeing and sagacious pioneers saw contained all the elements of future prosperity.

Speedily mastering the language with great perfection, Dr. M., by his rare skill in diagnosis and great practical tact in treatment, combined with most untiring devotion to his duties and warmly sympathetic feelings, endeared himself most remarkably to the intelligent and industrious community among whom his lot was cast.

It is noteworthy that in his practice (and the whole burden soon fell upon him, in consequence of the appointment of his

brother as Professor in one of our prominent Western Colleges,) there was scarcely an operation in Surgery or Obstetrics which it did not fall to his lot to perform, often most unexpectedly, and with the crudest appliances. Genius supplied the place of delicate instruments and costly apparatus. He extemporized means, and success crowned his operations in the most striking degree. After several years of labors, under which the most iron constitution could not fail to succumb, his health failed, and a chronic diarrhœa supervening upon a severe course of Typhoid Fever, ultimately compelled him to abandon the field of his arduous practice.

Soon after this, although still suffering unner the effects of his disease, he became connected with the army, commencing his services on the memorable Sunday at Pittsburg Landing, afterwards upon the Hospital boat, City of Memphis, and then in connection with the 44th Ill. Infantry. In all these relations he acquitted himself with credit to himself and advantage to the service. No heart was more open to sympathy, no hand more firm in its work. No toil or watching dismayed him. Many a soldier's grateful prayers will throw a halo around his memory.

From these duties he was suddenly recalled to attend as it was supposed the last hours of a fondly beloved father. While the father however yet lives, the son has passed from earth, lamented by his humble friends the Holland emigrants as a dearly beloved benefactor; by those of our diseased and wounded soldiery who had had the benefit of his pains-taking, tireless skill, as a conscientious, self-sacrificing patriot; by those who knew him in private life as the genial companion, the amiable gentleman, the honest, noble-souled man. A constitution enfeebled by chronic, almost uncontrollable, disease, was broken wholly down in a few hours by *Pneumonia Typhoides*. After life's fitful fever he sleeps well. Peace to his ashes.

Hospital Gangrene, etc.—In the next No. of the Journal we shall notice at length the exceedingly interesting report to the Surgeon-General, of Prof. MIDDLETON GOLDSMITH, Surgeon U. S. V., Louisville, Ky., on the use of Bromine, etc., in Hospital Gangrene, Erysipelas, and Pyæmia, as observed in the Depts. of the Ohio and Cumberland. We acknowledge its receipt with unmixed pleasure.

Our next No. will also contain an elaborate paper on the same subject, from an intelligent correspondent connected with the U. S. Hospitals in Memphis, Tenn.

The subject is one of peculiar importance and interest at the present time, and we welcome to our pages all earnest, thorough and clear-sighted examinations of the principles, facts and agencies involved.

Open Air Treatment of Phthisis.—Dr. Blake concludes another of his valuable treatises on the open air treatment of Phthisis:

Unfortunately but few localities afford facilities for fully carrying out this plan of treatment. Certainly in no other part of the globe can it be more readily tried than on this coast. For six months in the year we have a rainless climate, during the whole of which time our patients can live in the open air, under the most favorable hygienic conditions, and when the rainy season here would drive them into houses, a sea voyage of four or five days brings them to Northern Mexico, where, during the winter months they can enjoy a climate exactly analogous to our summer climate here, as in that country rain only falls between June and October. The intervening months are absolutely rainless. I have seen cases of consumption, in which a winter's residence there has been most beneficial, and I have a patient wintering there at present, who is reported as improving rapidly, although the disease had advanced to the third stage. When our patients are in a position to avail themselves of the advantages of the summer climate of California, and of the winter climate of Mexico, I believe there are few cases, except those in which the destruction of lung tissue is already too extensive, that cannot be cured. Many cases, both in the first and second stages, can be cured by merely passing

the summer out of doors in this country, but even in these, I believe wintering in Mexico would very much shorten the treatment. In all cases that have advanced to the third stage, wintering in Mexico should be recommended, as the treatment is much prolonged by the aggravation of the symptoms, during the time that the open air treatment has to be suspended. Every case, however, must be treated on its own merits; the time and means required for restoration to health, being more dependent on the general pathological and diathetic condition of the patient, than on the amount of change that has taken place in the lungs.

It is not my intention at present to enter on the questions of pathology and treatment which the above facts naturally suggest. This I hope to do on some future occasion. Their most important bearing I believe is, the support they bring to the views of those who place their chief reliance on the hygienic treatment of the disease. How striking a confirmation do these facts offer of the remark of Dr. Richardson, who, in his work on Consumption, observes:—

"In a cozy room the consumptive is bound never to live, nor in any room indeed, for any great length of time. So long as he is able to be out of doors, he is in his best and safest home. In the fields, on the hills, wherever the fresh air vivifies, where plants look most vigorous, and animals frisk about in the joy of health, there will the consumptive draw in his choicest medicine, there dissolve and throw off most freely the germs of his disease, and there repair most easily the tissues he has lost."

Received from the Publishers, by John R. Walsh, Elmir's Hand-Bood of Practice. This convenient pocket memorandum for practicing physicians is for sale by all our principal booksellers.

Errata.—Page 415—5th line from bottom, for Aqueduct read Viaduct.
Page 416—12th line from top, for Ecrassum read Ecraseur.
" " —14th line from bottom, for Paul Dubois read M. Depaul.
" 418—8th line from top, for Lithotomy read Lithotrity.

Vaccine Matter.—Carefully selected Vaccine Matter may be obtained by enclosing One Dollar and addressing *Chicago Medical Journal*, P. O. Drawer 5787, Chicago, Ills.

New Series, Vol. 6, No. 12. Whole Series, Vol. 20, No. 12.

THE CHICAGO

MEDICAL JOURNAL.

DANIEL BRAINARD, M. D.,
J. ADAMS ALLEN, M. D.,
Editors and Proprietors.

DECEMBER, 1863.

CHICAGO:

J. C. W. BAILEY, BOOK AND JOB PRINTER, 100 CLARK STREET.

1863.

CHICAGO MEDICAL JOURNAL.

Terms, $2.00 per Annum..

CONTENTS OF THE DECEMBER NUMBER.

PAGE.

SELECTED.

The Morbid Conditions of the Blood. A Lecture by Austin Flint, M. D. 530

On the Structure and Development of the Vertebrate Skeleton. By Prof. Huxley, F. R. S. 539

Retreat for Intemperate Women 547

ORIGINAL COMMUNICATIONS.

Clininical Lectures on Diseases of the Eye. By E. L. Holmes, M. D., of Chicago, Lecturer on Diseases of the Eye and Ear, in Rush Medical College, etc 548

Pyæmia, or Leukæmia. By Geo. R. Weeks, Surgeon of U. S. Vol., in charge of Church Hospital 554

EDITORIAL AND MISCELLANEOUS 561

FOR SALE

Two Nicely Cleaned and Bleached Skeletons.

Price, ... $10 each.

Address: CHAS. KEIL, *Chicago, Ill.*

☞ Business letters to the JOURNAL should be addressed to Dr. E. INGALS, Chicago, Ills., P. O. Drawer 5787. When money is received a receipt will be returned with the next number of the JOURNAL, and subscribers failing to get such receipt will confer a favor by giving us notice of the omission.

BLISS & SHARP,

Druggists and Chemists

144 Lake Street, Chicago,

KEEP CONSTANTLY ON HAND A LARGE ASSORTMENT OF

PURE DRUGS, FINE CHEMICALS, THAYER'S FLUID EXTRACTS AND SUGAR COATED PILLS,

KEITH'S PREPARATIONS,

Tieman's Celebrated Surgical Instruments; Trusses, Elastic Stockings, Bandages, etc.

— PARTICULAR ATTENTION PAID TO —

PHYSICIAN'S ORDERS.

TOLLE & DEGENHARDT,

MANUFACTURERS OF

Surgical and Dental Instruments,

TRUSSES, BANDAGES AND CUTLERY,

No. 130 CLARK ST.,

(Larmon's Block.)

CHICAGO, - - - - - - ILLINOIS.

REPAIRING DONE AT THE SHORTEST NOTICE.

We beg to call the attention of Physicians to our superior advantages in filling their orders. *Manufacturing* largely, it is our aim and object to be unsurpassed by any *House* in the *Northwest*. By paying particular attention to the quality of our goods we feel confident of pleasing all who entrust us with their orders.

Orders can be sent by *Express* to any part of the country at a trifling expense.

Post Office Box 2679.

BUCK & RAYNER,

APOTHECARIES

Beg to inform the Profession that they have lately added to their assortment of Fine Standard Preparations the undermentioned Medicated Lozenges They will be found agreeable in flavor, and of uniform quality and excellence.

Chlorate Potash Lozenges,
Containing 2½ grs. Potas. Chlor. pure in each Lozenge.

Borax Lozenges,
Containing 2½ grs. Sodæ Boras pure in each Lozenge.

Santonin Lozenges,
Containing ¼ grain Santonin Pure in each Lozenge.

Astringent Lozenges, Of Alum and Kino.

Liquorice Lozenges.

The undersigned devote particular attention to PHYSICIANS' ORDERS, and keep constantly a large Stock of Pure and Rare DRUGS and CHEMICALS, with general Medical Merchandise. Orders by Mail promptly executed.

BUCK & RAYNER,

CENTRAL PRESCRIPTION DRUG STORE,

93 CLARK STREET, LARMON BLOCK,

P. O. Box 4104. [march, '83] CHICAGO, ILL.

SARGENT'S

ELIXIR CALISAYÆ FERRATUM.

THE FERRATED ELIXIR OF CALISAYA

Is a new combination of the important remedies, *Iron, Phosphorus and Peruvian Bark*, combined with aromatics. Each tablespoonful represents 12 grains of the best Calisaya Bark, and contains in permanent solution, 4 1-6 grains of the Pyro-Phosphate of Iron, forming an agreeable aromatic Elixir, and the most elegant tonic yet produced.

Being entirely free from the repulsive inky taste and color peculiar to ordinary combinations of Iron and Cinchona, it is pleasant to the taste, and acceptable to the most delicate stomach, thus supplying a desideratum long felt by the medical profession.

The ordinary dose is from a teaspoonful to a dessert spoonful, from two to four times, daily.

Physicians can obtain a specimen of the Elixir by addressing me.

— PREPARED BY —

E. H. SARGENT,

MANUFACTURING PHARMACEUTIST,

COR. RANDOLPH & STATE STS., CHICAGO.

☞ Druggists and Physicians can obtain this Preparation, in Bulk or in Pint Bottles, of any Wholesale Druggist in Chicago.

DR. EDWARD L. HOLMES,

39 North Clark Street, Chicago.

Special attention given to diseases of the Eye and Ear.
Referred, by permission, to the editors of this journal.